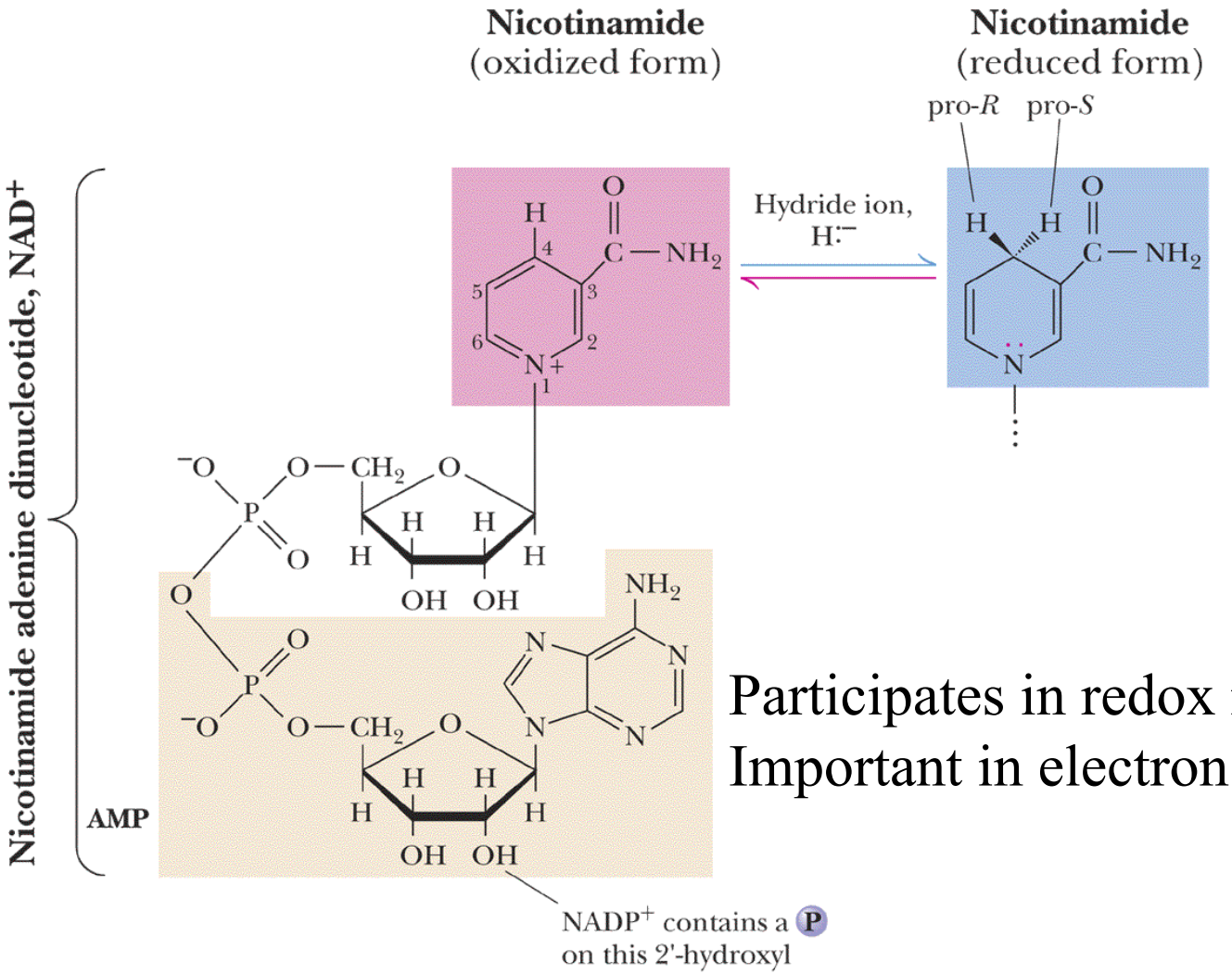
Vitamins

NAD+ and NADH

Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.16

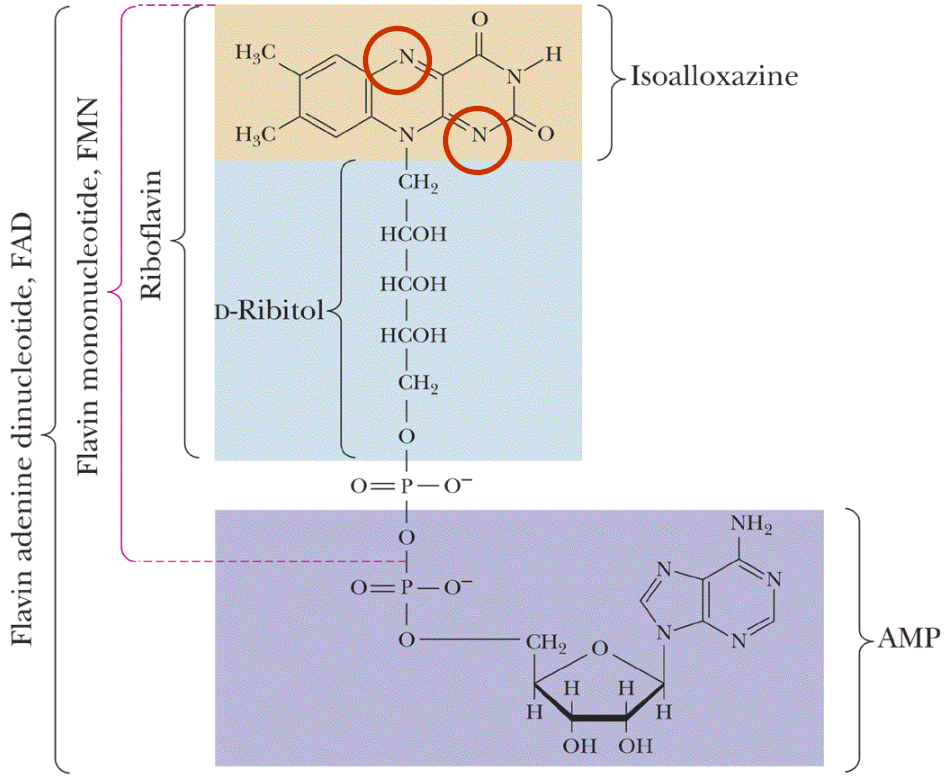


Participates in redox reactions
Important in electron transport

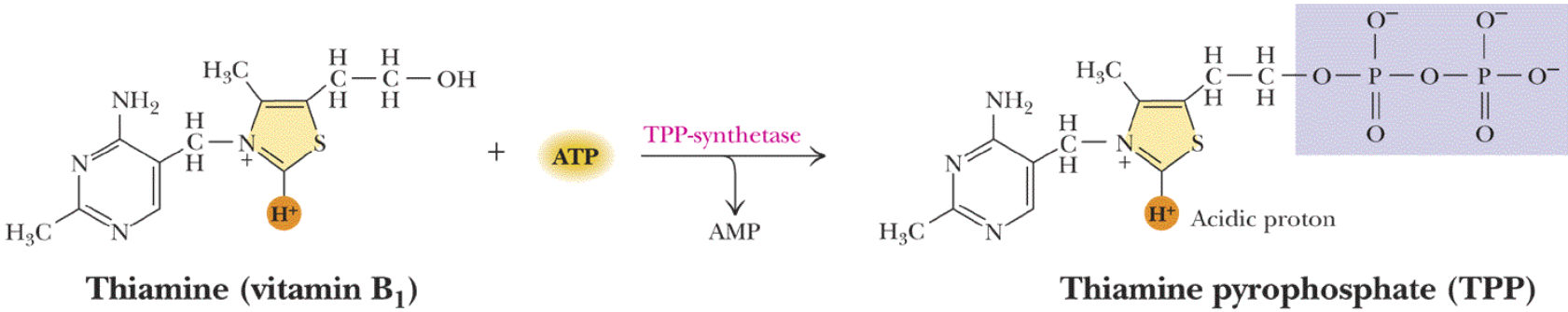
Riboflavin (Vitamin B2)

Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.17

Also involved in redox reactions
And electron transport



Thiamine (Vitamin B1)

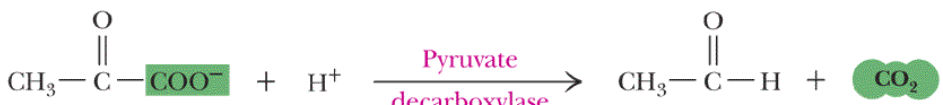


Thiamine pyrophosphate (TPP) is active form

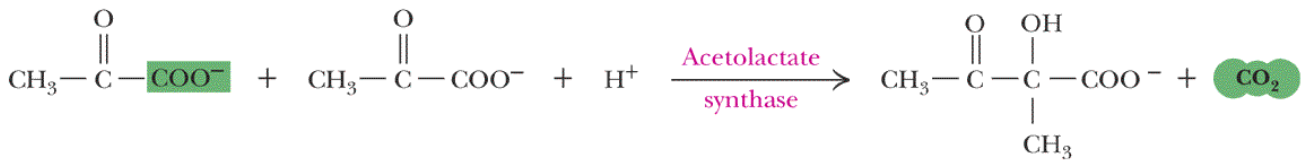
Cofactor in decarboxylations when COO^- is next to carbonyl

Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.15

* (a) An α-cleavage reaction



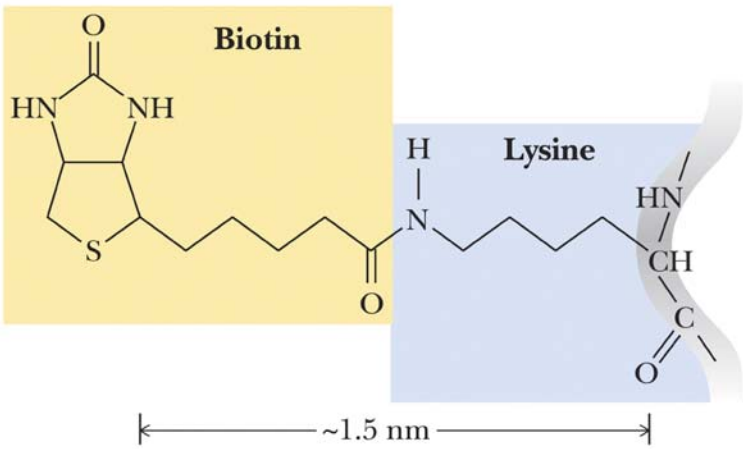
(b) An α-condensation reaction



* Important reaction

Biotin

Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.27

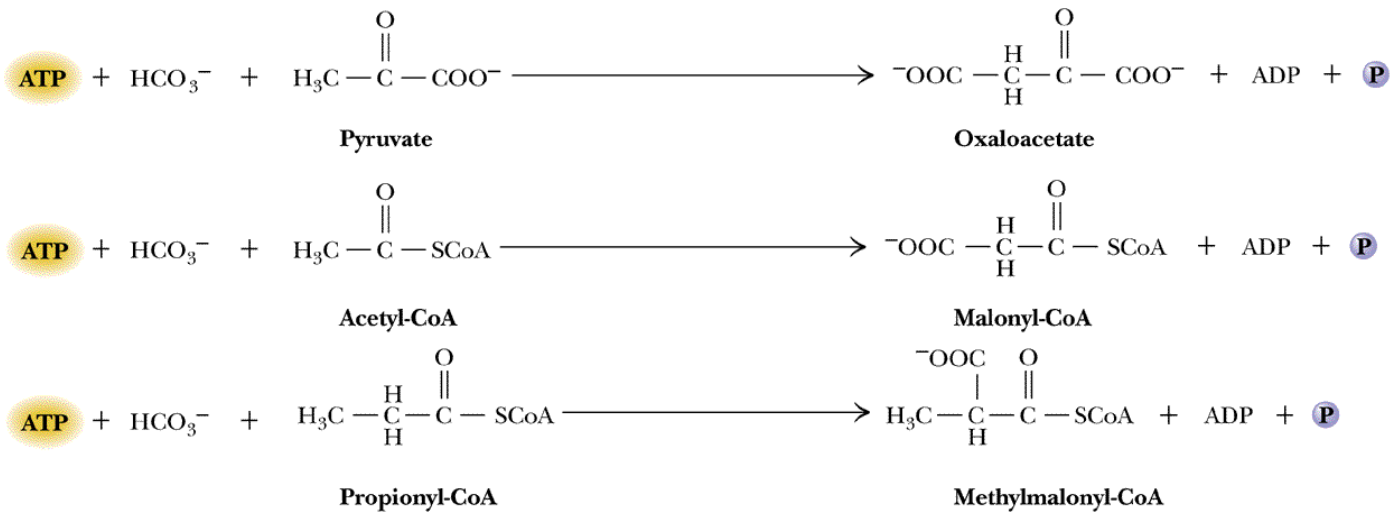


The biotin-lysine (biocytin) complex

Long tether allows biotin to
Pick up carboxylate groups in one place
Use them in another

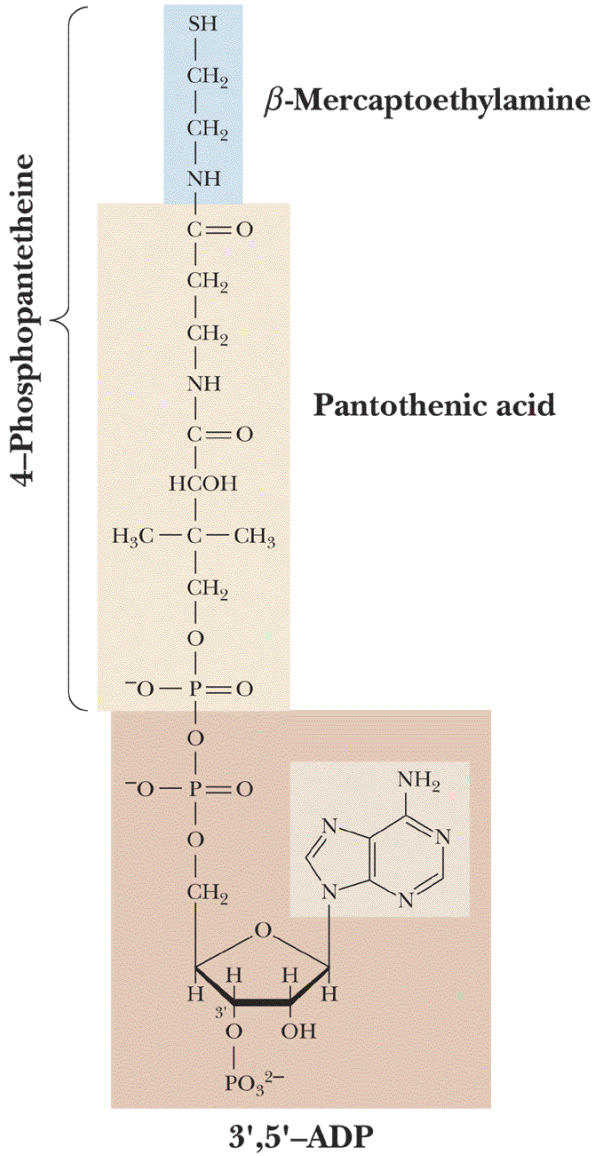
Table 14.5 Principal Biotin-Dependent Carboxylations

ATP-dependent



Pantothenic Acid (Vitamin B3)

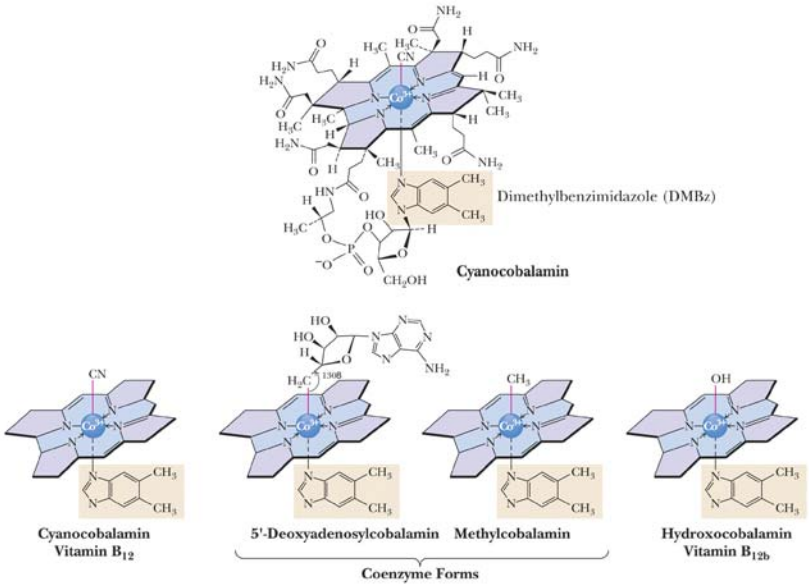
Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.19



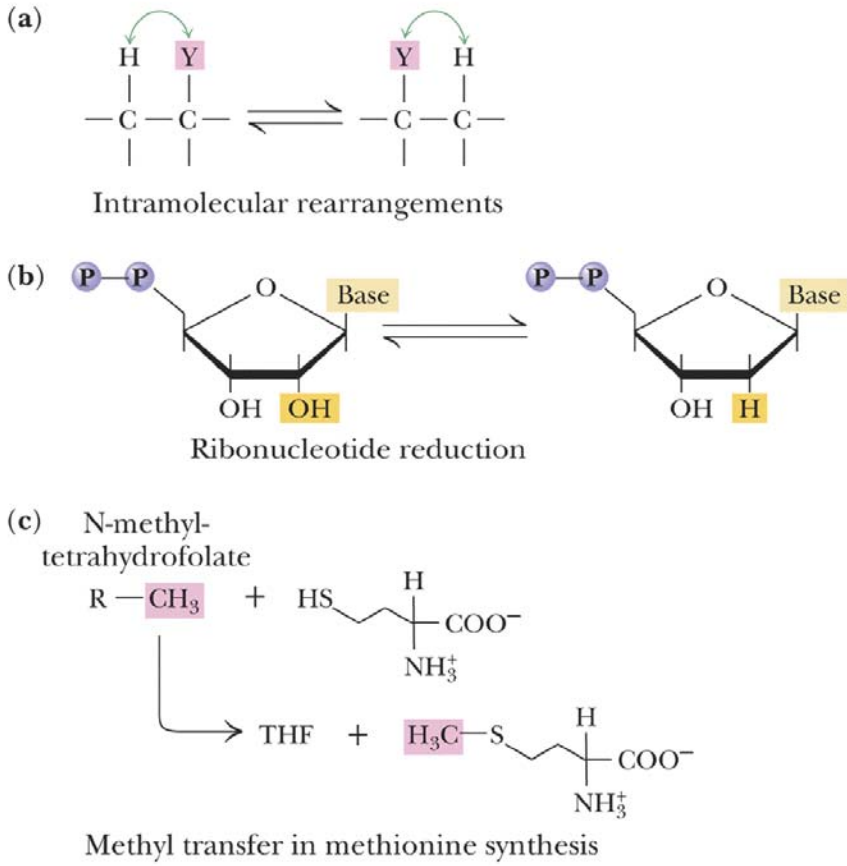
Coenzyme A
Important in many
Metabolic steps

Vitamin B12

Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.23

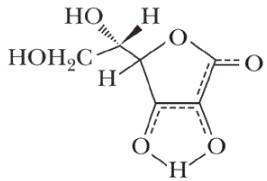


Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.24



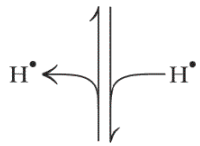
Vitamin C

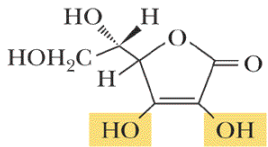
Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.25



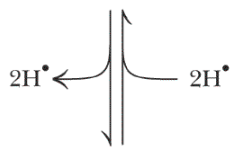
L-Ascorbate free radical

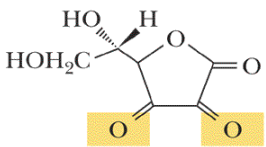
Reducing agent





Ascorbic acid (Vitamin C)

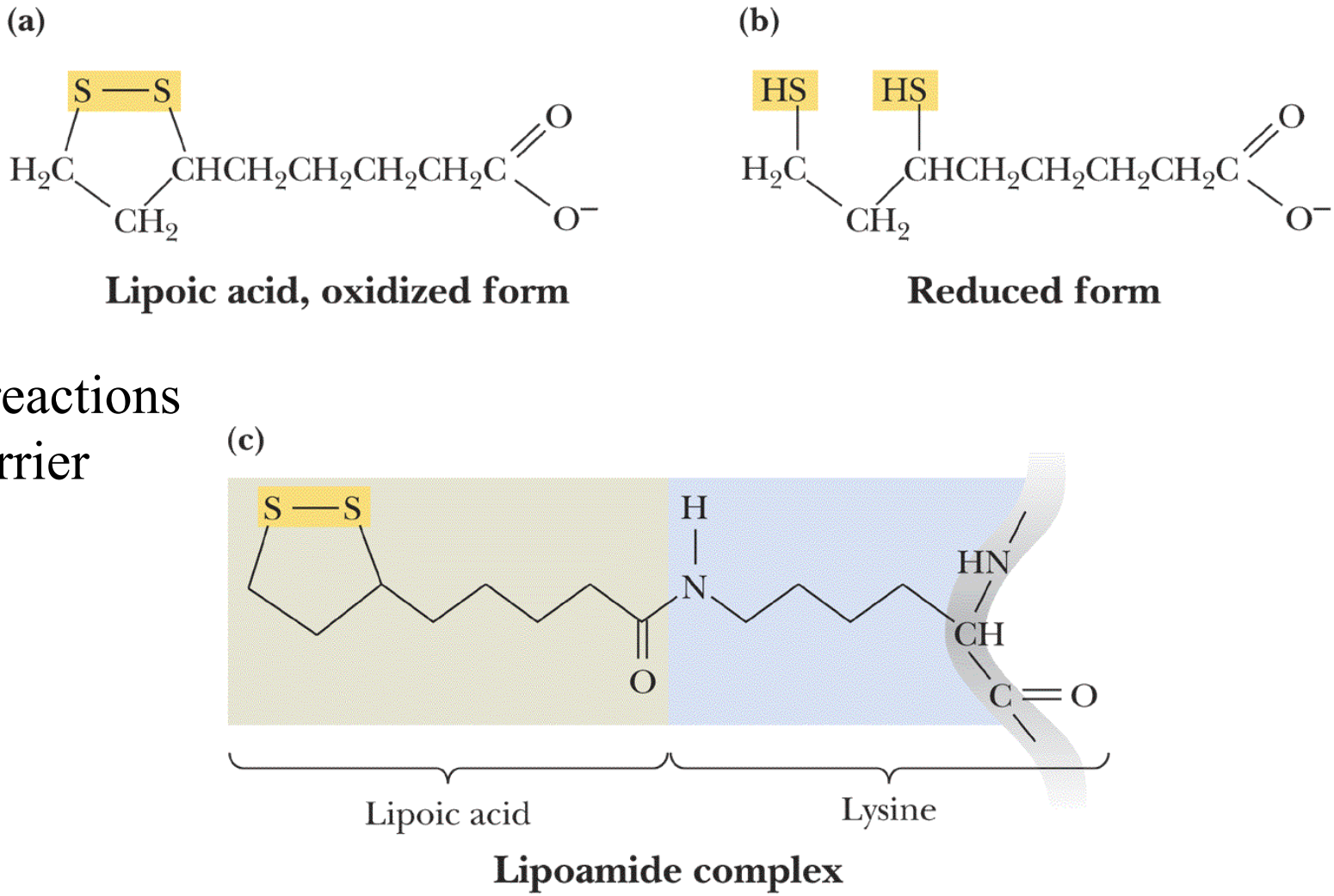




Dehydro-L-ascorbic acid

Lipoic Acid

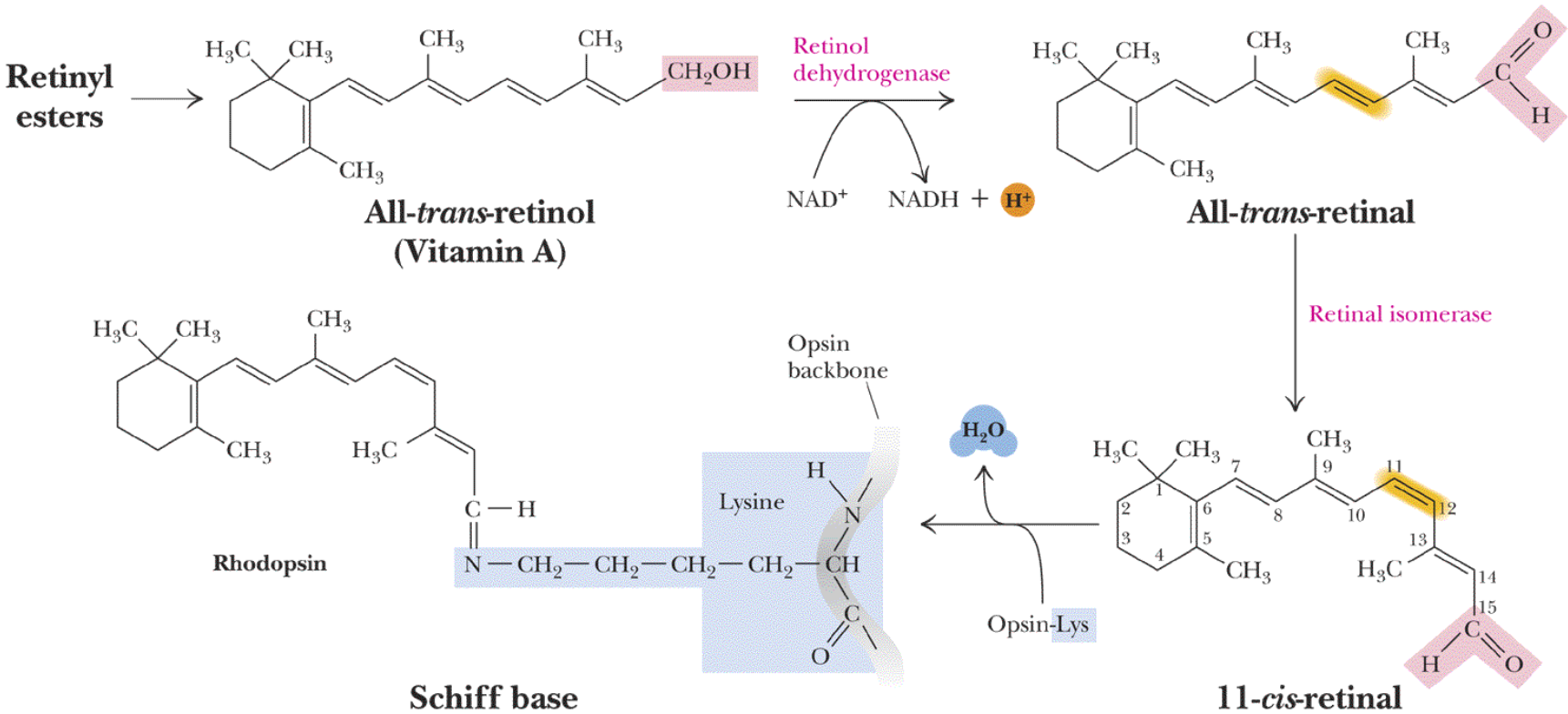
Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.28



Redox reactions
Acyl carrier

Vitamin A

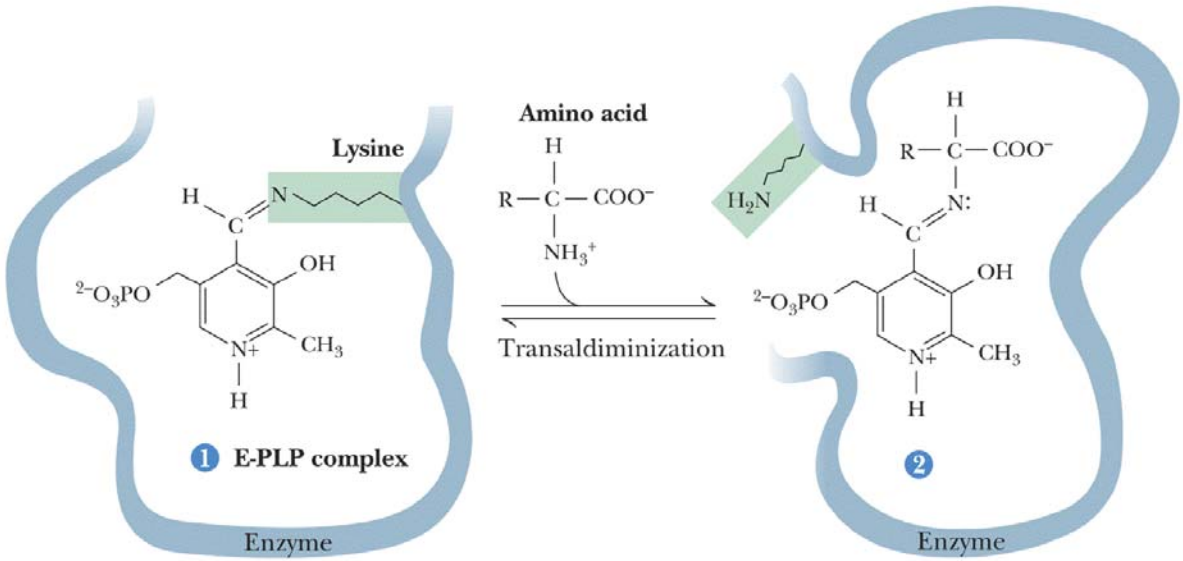
Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.31

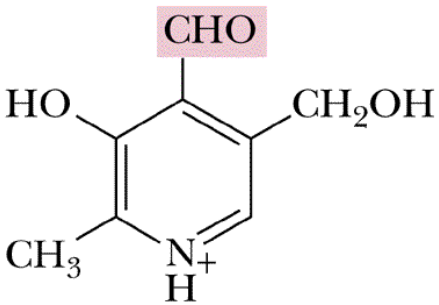


ADH in fetus makes retinoic acid

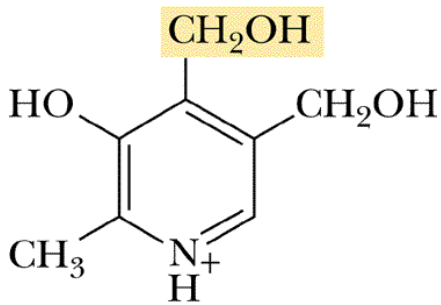
PLP (vitamin B6)

Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.22

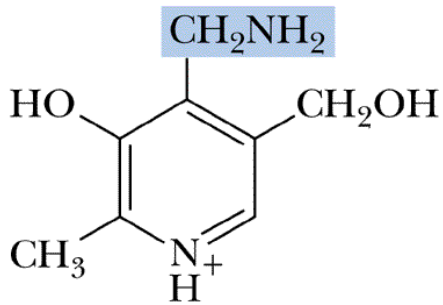




Pyridoxal



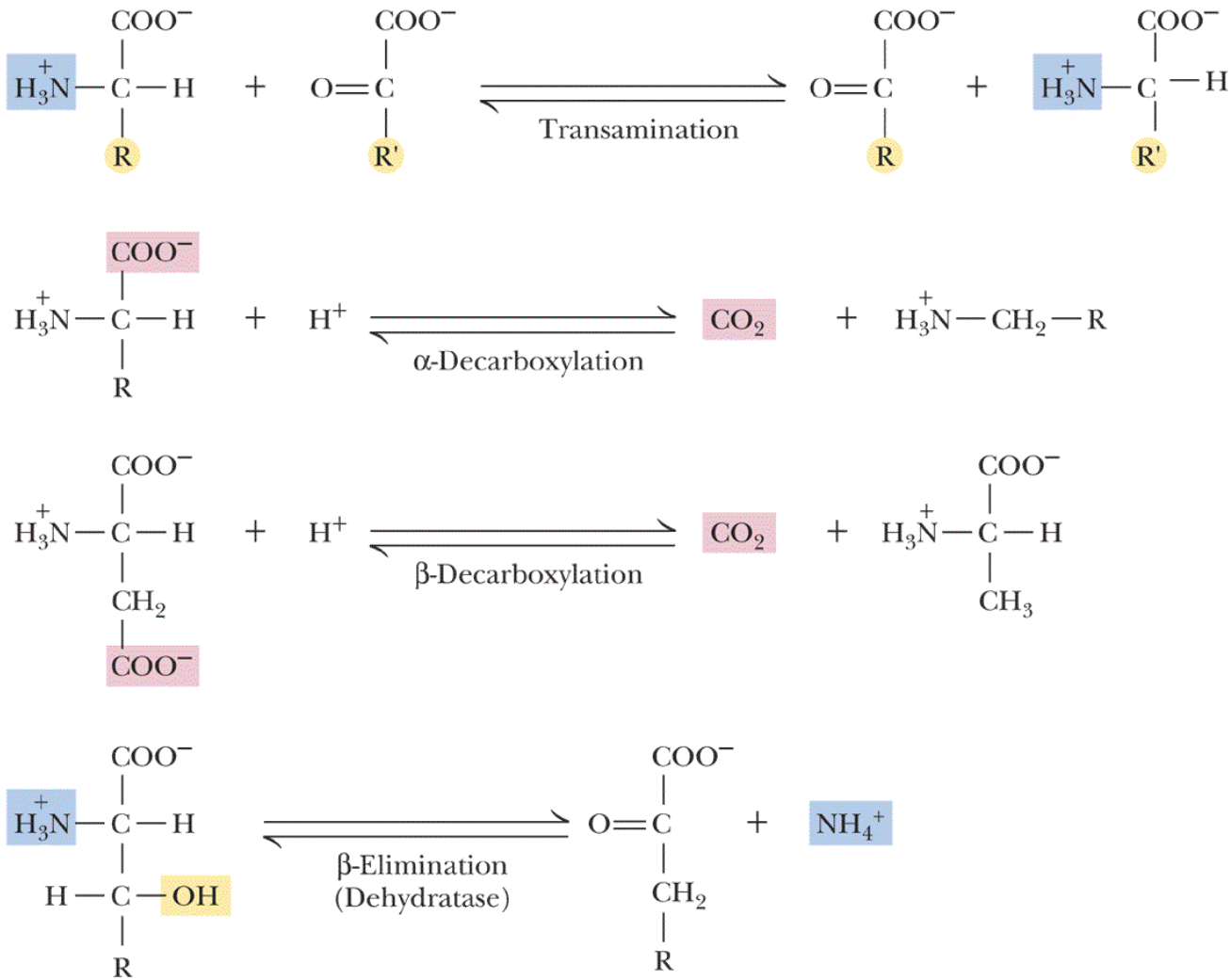
Pyridoxine or pyridoxol



Pyridoxamine

Reactions catalyzed by PLP

Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.21 (part 1)



Garrett/Grisham, Biochemistry with a Human Focus
Figure 14.21 (part 2)